AMENDED CLAIMS

[received by the International Bureau on 13 June 2005 (13.06.05),
original claims 1 to 12 replaced by new claims 1 to 9 (2 pages)]

1. A turbine or rotor that essentially consists of a plurality of relatively long curved vanes or " wing sections " of a curved or " airfoil " cross sectional profile circumferentially arranged around a hub or shaft having its central axis substansially parallel to the incoming gas / fluid flow with each of the said vanes having its longitudal sides tangentially intersecting forming a tip at both its ends and these two most extreme tips predominately representing the true leading and trailing edges in relation the apparent gas or fluid flow direction during rotation at the desired tip speed ratio as these said tips are both orientated to form an angle of between 0 and 36 degrees to the said apparent flow with the said longitudal sides oriented at an angle to the said relative flow direction and each of the said vanes substansially projecting from the frontward outer end of a secondary inner section or blade that connects it to the said hub or shaft providing support for the said outer sections whilst imparting minimal drag or blockage effects upopn the gas / fluid flow
the complete rotating outer section, inner section , hub / shaft assembly forming a substansial circular " void " within the turbine or rotor inner frontward area.

2. A turbine or rotor as described in claim 1 that has the greatest proportion of its vane / blade surface area situated between 0.33 - 0.46 of its diameter radially from the central axis of rotation .

3. A turbine or rotor as described in claim 1 that has its inner blade or support sections being of a width less than half of the length of the outer vane sections , and may in the most basic embodiment be made in the form of a shaft protruding downwards from the centroid of area of the vane / blade sections , perpendicular to the shaft / hub axis as the vane / blade sections may be integrally formed and susbstansially balanced , both in mass distribution and the sum of moments or twist forces due to lift / deflection forces , about a central line passing through the said centroid of area , also coinciding with the said shaft centerline.

4. A turbine or rotor as described in claim 1 that does not need to have its substansially forwardly cantilevered outer vane sections balanced or solely supported by a wide inner blade (or support section) because of the addition of a narrow annular rim fixed to the outer , most frontward extremity of all the outer vane sections providing additional rigidity by unifying the structure.

5. A turbine or rotor as described in claim 1 with its outer vane / inner sections radially displaced around a hub or shaft in helix or pitch angle that can be varied through vane articulation mechanisms built into the hub or by allowing vane / blade flexing due to stresses above a given velocity to alter vane attack angle , all being useful at providing speed variation , ultimate speed limiting or benifitting start up / shut down conditions .

6. A turbine or rotor as described in claim 1 to 5 that has stationary deflective vanes or a smaller rotor rotating in the opposite direction to itself , generally located within the inner void formed at its entrance such that the incoming gas / fluid flow is given a helical path in the opposite opposite hand to the apparent gas / fluid flow outwardly and / or rearwardly so as to maximize the percentage of lift forces developed by the vanes converted into actual torque at the shaft and not wasted as rearward thrust at the bearings in the case of a turbine , or to maximize actual total thrust developed in the case of a propulsion rotor because the gas fluid flow may be made to exit with little if any apparent helix angle .

7. A turbine or rotor as described in claim 1 with outer vane sections that contain within their rearward extremities one or more narrow slots orientated at an obtuse angle in relation to the axis of rotation and generally converging towards the rear turbine or rotor central axis , that have at their respective outer trailing exits , a radius or curvature forming another minor " airfoil " section also having its own angle of incedence to the said apparent gas / fluid flow adding to the maximum lift forces developed in that rearward part of the vane helping it to counteract or balance twisting effects caused by the incorporation of extraordinarily pronounced " leading tips "

8. A turbine or rotor as described in claim 1 to 6 that may be utilized to operate within a duct , column , passage or enclosure and may even include the reticulation of a fluid through the turbine exitting into a chamber or passage that directs the fluid back around to the front entrance of a propulsion rotor located substansially within the " inner void " formed at the entrance of the said turbine such that the complete unit may operate as a fluid driven coupling or transmission , with speed variation also possible with the inclusion of turbine pitch or attack angle adjustment through vane articulation as described in claim 5 .

9. A turbine or rotor as herein before described with references to Figures 1 - 7 of the accompaning drawings.

Frank Daniel Lotrionte 4 th June - 2005